

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-328115

(43)Date of publication of application : 22.12.1997

(51)Int.Cl.

B65D 1/02

(21)Application number : 08-148978

(71)Applicant : MITSUBISHI PLASTICS IND LTD

(22)Date of filing : 11.06.1996

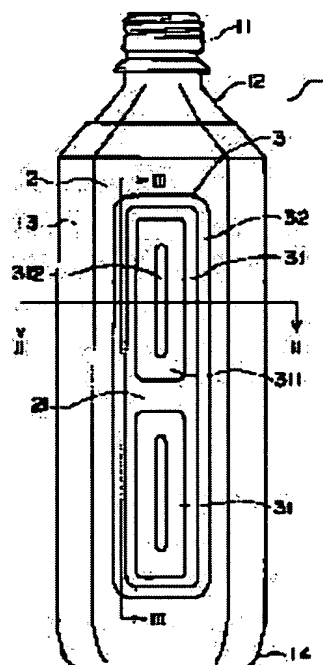
(72)Inventor : SUZUKI YOSHINORI

## (54) SQUARE BOTTLE MADE OF PLASTIC

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To impart rigidity to the whole bottle body, and prevent a deforming panel part from recessing by a gripping force even when the deforming panel part is gripped by hand by providing a deforming panel for which a plurality of valley-shaped deforming parts being constituted of tilted walls which tilt inward, are arranged, and a thin recessed groove is formed around the valley-shaped deforming parts.

**SOLUTION:** On a wall surface 2 of the body part of a square bottle main body b1 made of a plastic, a plurality of valley-shaped deforming parts 31 being constituted of a tilted wall 311 which tilt inward from the wall surface 2 of the body part, are arranged, and at the same time, a thin recessed groove 32 is formed to surround the valley-shaped deforming part 31 to form a deforming panel part 3, and the deforming panel part 3 is provided on the wall surface 2 of the body part. By doing so, a deformation of the bottle main body due to a pressure being generated in the bottle, is absorbed by a deformation of the deforming panel part 3, and at the same time, the rigidity of the bottle is strengthened by the wall surface of the body part between two valley-shaped deforming parts 31, as a lateral bridge 21, and for this reason, even when the deforming part of the bottle is gripped by hand, the spot is prevented from recessing by the gripping force.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平9-328115

(43)公開日 平成9年(1997)12月22日

(51)Int.Cl.<sup>8</sup>

B 6 5 D 1/02

識別記号

庁内整理番号

F I

B 6 5 D 1/02

技術表示箇所

B

審査請求 未請求 請求項の数 4 O L (全 4 頁)

(21)出願番号 特願平8-148978

(22)出願日 平成8年(1996)6月11日

(71)出願人 000006172

三菱樹脂株式会社

東京都千代田区丸の内2丁目5番2号

(72)発明者 鈴木 吉範

神奈川県平塚市真土2480番地 三菱樹脂株式会社平塚工場内

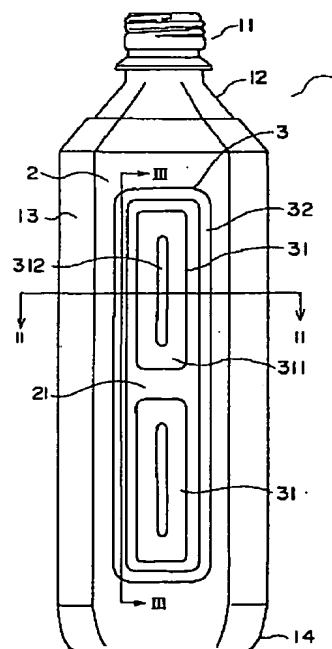
(74)代理人 弁理士 近藤 久美

(54)【発明の名称】 プラスチック製角型ボトル

(57)【要約】

【課題】 圧力吸収用の変形パネル部を形成したプラスチック製角型ボトルの変形パネル部を手で把持した際その個所が把持力により凹みを生じボトル自体の剛性が無い感じを与える。

【解決手段】 プラスチック製角型ボトル本体1の胴部壁面2に、該胴部壁面2から内方に傾斜する傾斜壁31により構成される谷状変形部31を複数個配設すると共に、その谷状変形部31を囲んで細凹溝32を形成してなる変形パネル部3を設けたことを特徴とするプラスチック製角型ボトル。



## 【特許請求の範囲】

【請求項 1】 プラスチック製角型ボトル本体の胴部壁面に、該胴部壁面から内方に傾斜する傾斜壁により構成される谷状変形部を複数個配設すると共に、その谷状変形部を囲んで細凹溝を形成してなる変形パネル部を設けたことを特徴とするプラスチック製角型ボトル

【請求項 2】 谷状変形部を縦方向に 2 個配設すると共に、2 個の谷状変形部全体を包含するように囲んで細凹溝を形成してなる請求項 1 記載のプラスチック製角型ボトル

【請求項 3】 谷状変形部を縦方向に 2 個配設すると共に、2 個の谷状変形部それぞれを個々に包含するように囲んで細凹溝を形成してなる請求項 1 記載のプラスチック製角型ボトル

【請求項 4】 細凹溝をボトル本体の長手方向の中心に向かって深くした請求項 1～3 記載のプラスチック製角型ボトル

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、圧力吸収用の変形パネル部が形成されているプラスチック製角型ボトルに関する。

## 【0002】

【従来の技術】従来より、果汁入り飲料など加熱殺菌を必要とする内容液を充填するプラスチック製角型ボトルにおいて、ボトル本体の胴部に圧力吸収用の変形パネル部が形成されているものは知られている。

【0003】このボトル本体の胴部に形成した圧力吸収用の変形パネル部は、内容液をボトルに充填した際に生じる加圧力、内容液をボトルに充填後キャップをする際に生じる加圧力、内容液を加熱殺菌する際の温度低下に伴って生じる減圧力などに対応してこの変形パネル部が変形していち早く応力を吸収し、ボトル本体の他の個所が変形してボトルの外観を損ねるのを防止しようとするものである。

【0004】そのため、図 6 に正面図を示すように、変形パネル部 3 として、角型ボトル本体 1 の胴部壁面 2 に該胴部壁面 2 から内方に傾斜する傾斜壁 311 により構成される谷状変形部 31 を複数個配設すると共に、その谷状変形部 31 を囲んで細凹溝 32 を形成してなる変形パネル部を設けたものなどがある。

## 【0005】

【発明が解決しようとする課題】しかし、このような圧力吸収用の変形パネル部を形成したプラスチック製角型ボトルは、圧力の変化に対応する変形はスムーズに行なわれるが、その変形パネル部がボトル本体の縦長方向ほぼ全長にわたって形成してあるので、ボトルの変形パネル部を手で把持した際その個所が把持力により凹みを生じボトル自体の剛性がない感じを与え好ましくない。

## 【0006】

【課題を解決するための手段】本発明のプラスチック製角型ボトルは、高温の内容液を充填しても、圧力吸収用の変形パネル部が、それに伴う減圧力に対応した変形をして、ボトル本体の他の個所が変形を生じてボトルの外観を損ねるのを防止するとともに、ボトル全体に剛性を与え、ボトルの変形パネル部などを手で把持した際にもその個所が把持力により凹みを生じないようにしたものであって、その要旨は、プラスチック製角型ボトル本体の胴部壁面に、該胴部壁面から内方に傾斜する傾斜壁により構成される谷状変形部を複数個配設すると共に、その谷状変形部を囲んで細凹溝を形成してなる変形パネル部を設けたことを特徴とするプラスチック製角型ボトルである。

【0007】以下、本発明のプラスチック製角型ボトルを具体的に説明する。

【0008】図 1 は本発明のプラスチック製角型ボトルの一例を示す正面図、図 2 は図 1 の II-II 部分断面図、図 3 は図 1 の III-III 部分断面図、図 4 は本発明のプラスチック製角型ボトルの他の例を示す正面図、図 5 は図 4 の V-V 部分断面図であり、図 6 は従来のプラスチック製角型ボトルの一例を示す正面図である。

【0009】本発明の角型ボトルは、図 1～図 5 に示すように、プラスチック製角型ボトル本体 1 の胴部壁面 2 に、該胴部壁面 2 から内方に傾斜する傾斜壁 311 により構成される谷状変形部 31 を複数個配設すると共に、その谷状変形部 31 を囲んで細凹溝 32 を形成してなる変形パネル部 3 を設けたことを特徴とするプラスチック製角型ボトルである。

【0010】プラスチック製角型ボトル本体 1 は、たとえばポリエステル樹脂の二軸延伸ブロー成形により得られ、下に底部 14 を連設した横断面が正形状、あるいはその隅部を落とした八角形状の胴部 13 の上端にテーパ筒状の肩部 12 を介して口栓部 11 を起立連設して構成され、胴部 13 の胴部壁面 2 にはボトル内に発生した圧力を変形吸収するための変形パネル部 3 がそれぞれ形成されている。

【0011】変形パネル部 3 は、複数個配設された谷状変形部 31 と、その谷状変形部 31 を囲んで形成された細凹溝 32 とで構成されている。

【0012】図 1～図 3 に示すものにおいては、谷状変形部 31 を縦方向に 2 個配設すると共に、2 個の谷状変形部 31 全体を包含するように囲んで細凹溝 32 を形成して変形パネル部 3 としてある。

【0013】このようにしてあると、ボトル内に発生した圧力は、2 つの谷状変形部 31 の個々の変形、および細凹溝 32 で囲まれた 2 つの谷状変形部 31 全体から構成される変形パネル部 3 の変形によって、ボトル本体 1 の変形が吸収されるようになるとともに、2 つの谷状変形部 31 の間の胴部壁面が横棧部 21 としてボトルの剛性を強化しボトルの変形パネル部などを手で把持した際

にもその個所が把持力により凹みを生じない。

【0014】また、谷状変形部31を囲んだ細凹溝32は、全体が均一の深さでもよいが、図3に示すようにボトル本体1の長手方向の中心に向かって直線状に深くしたり、図示しないが階段状に深くしたものとすれば、長手方向の中心が特に強化され、ボトル胴部の剛性をより高めたものとすることができる。

【0015】図4～図5に示すものにおいては、谷状変形部31を縦方向に2個配設すると共に、2個の谷状変形部31それぞれを個々に包含するように囲んで細凹溝32を形成して変形パネル部3としてある。

【0016】このようにしてあると、ボトル内に発生した圧力は、2つ縦方向に個々に併設してある変形パネル部3がボトル本体の変形を吸収すると共に、変形パネル部3が個々に2つ独立した態様で設けてあるので、変形パネル部3の間の横棧部21が両側の胴部壁面2と連続し、なおいっそうボトルの剛性を強化しボトルを手で把持した際にもその個所が把持力により凹みを生じない。

【0017】この場合も、谷状変形部31を囲んだ細凹溝32は、全体が均一の深さでもよいが、図5に示すようにボトル本体1の長手方向の中心に向かって直線状に深くしたり、図示しないが階段状に深くしたものとすれば、長手方向の中心が特に強化され、ボトル胴部の剛性をより高めたものとすることができる。

【0018】なお、図1～図5の例では谷状変形部31の谷底部312を細凹面に形成してあるが、傾斜壁311を、該胴部壁面2から内方の奥まで傾斜させて線状の谷底部としてもよい。

【0019】

【発明の効果】本発明は、プラスチック製角型ボトル本

体の胴部壁面に、該胴部壁面から内方に傾斜する傾斜壁により構成される谷状変形部を複数個配設すると共に、その谷状変形部を囲んで細凹溝を形成してなる変形パネル部を設けたことを特徴とするプラスチック製角型ボトルであるので、このボトルに高温の内容液を充填し、冷却する過程でボトル内の圧力が低下すると、陥没変形してその圧力を吸収するようになるので、ボトルの他の個所が変形することを防止することができるばかりでなく、さらに、複数個配設された各谷状変形部の間の胴部壁面がボトルの剛性を強化しボトルの変形パネル部などを手で把持した際にもその個所が把持力により凹みを生じないものである。

【図面の簡単な説明】

【図1】 本発明のプラスチック製角型ボトルの一例を示す正面図

【図2】 図1のII-II部分断面図

【図3】 図1のIII-III部分断面図

【図4】 本発明のプラスチック製角型ボトルの他の例を示す正面図

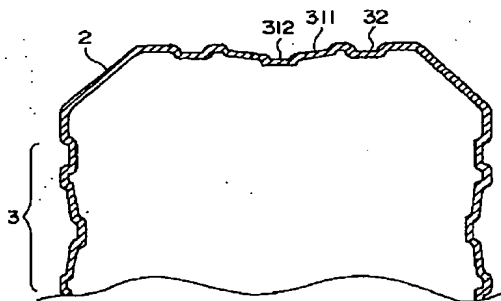
【図5】 図4のV-V部分断面図

【図6】 従来のプラスチック製角型ボトルの一例を示す正面図

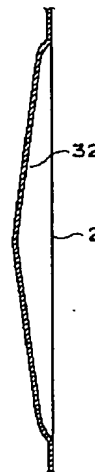
【符号の説明】

- 1 ボトル本体
- 2 胴部壁面
- 3 変形パネル部
- 31 谷状変形部
- 311 傾斜壁
- 32 細凹溝

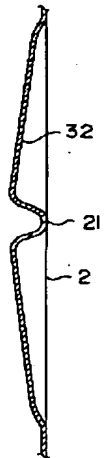
【図2】



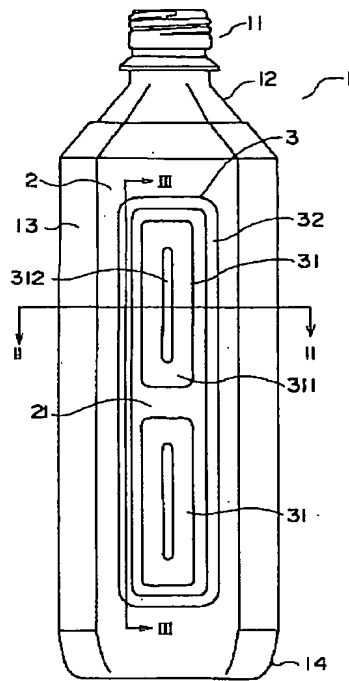
【図3】



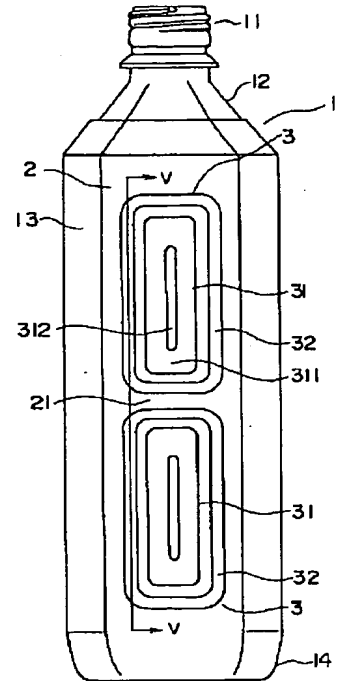
【図5】



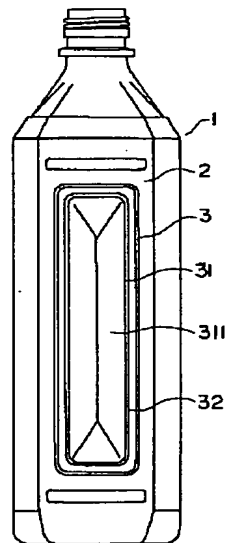
【図1】



【図4】



【図6】



**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**CLAIMS**

---

[Claim(s)]

[Claim 1] The square shape bottle made from plastics characterized by preparing the deformation panel section which surrounds the trough status change type section, and comes to form a thin concave while arranging two or more trough status change type sections constituted from this drum section wall surface with the dip wall which inclines in the method of inside by the drum section wall surface of the body of the square shape bottle made from plastics [claim 2] The square shape bottle made from plastics according to claim 1 which surrounds so that the two whole trough status change type section may be included, and comes to form a thin concave while arranging the trough status change type section in two lengthwise directions [claim 3] The square shape bottle made from plastics according to claim 1 which surrounds so that each two trough status change type section may be included separately, and comes to form a thin concave while arranging the trough status change type section in two lengthwise directions [claim 4] The square shape bottle made from plastics according to claim 1 to 3 which made the thin concave deep toward the core of the longitudinal direction of the body of a bottle

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the square shape bottle made from plastics with which the deformation panel section for pressure absorption is formed.

[0002]

[Description of the Prior Art] In the square shape bottle made from plastics conventionally filled up with the content liquid which needs heat sterilization, such as a drink containing fruit juice, that by which the deformation panel section for pressure absorption is formed in the drum section of the body of a bottle is known.

[0003] The deformation panel section for pressure absorption formed in the drum section of this body of a bottle The welding pressure which produces the welding pressure and content liquid which are produced when a bottle is filled up with content liquid in case the cap after restoration is carried out to a bottle, It is going to prevent this deformation panel section deforming corresponding to the reduced pressure force produced with the temperature lowering at the time of heat-sterilizing content liquid, and absorbing stress promptly, and other parts of the body of a bottle deforming, and spoiling the appearance of a bottle.

[0004] Therefore, as a front view is shown in drawing 6, while arranging two or more trough status change type sections 31 constituted from this drum section wall surface 2 by the drum section wall surface 2 of the body 1 of a square shape bottle as the deformation panel section 3 with the dip wall 311 which inclines in the method of inside, the trough status change type section 31 is surrounded, and there are some which prepared the deformation panel section which comes to form the thin concave 32.

[0005]

[Problem(s) to be Solved by the Invention] however -- although deformation corresponding to change of a pressure in the square shape bottle made from plastics in which such the deformation panel section for pressure absorption was formed is performed smoothly -- the deformation panel section -- method \*\* of longwise of the body of a bottle -- since it has formed covering the overall length mostly, it gives the sensibility which the part produces a depression by the retention span, and does not have the rigidity of the bottle itself and is not desirable when the deformation panel section of a bottle is grasped by hand

[0006]

[Means for Solving the Problem] Even if the square shape bottle made from plastics of this invention is filled up with hot content liquid While preventing the deformation panel section for pressure absorption carrying out deformation corresponding to the reduced pressure force accompanying it, and other parts of the body of a bottle producing deformation, and spoiling the appearance of a bottle Give rigidity to the whole bottle, and also when the deformation panel section of a bottle etc. is grasped by hand, it is made for the part not to produce a depression by the retention span. The summary While arranging two or more trough status change type sections constituted from this drum section wall surface with the dip wall which inclines in the method of inside by the drum section wall surface of the body of the square shape bottle made from plastics, it is the square shape bottle made from plastics characterized by preparing the deformation panel section which surrounds the trough status change type section, and comes to form a thin concave.



[0007] Hereafter, the square shape bottle made from plastics of this invention is explained concretely.

[0008] For the front view in which drawing 1 shows an example of the square shape bottle made from plastics of this invention, and drawing 2, the II-II fragmentary sectional view of drawing 1 and drawing 3 are III-III of drawing 1. A fragmentary sectional view, the front view in which drawing 4 shows other examples of the square shape bottle made from plastics of this invention, and drawing 5 are V-V of drawing 4. It is a fragmentary sectional view and drawing 6 is the front view showing an example of the conventional square shape bottle made from plastics.

[0009] The square shape bottle of this invention is a square shape bottle made from plastics characterized by forming the deformation panel section 3 which surrounds the trough status change type section 31, and comes to form the thin concave 32 while arranging two or more trough status change type sections 31 constituted from this drum section wall surface 2 by the drum section wall surface 2 of the body 1 of the square shape bottle made from plastics with the dip wall 311 which inclines in the method of inside, as shown in drawing 1 - drawing 5.

[0010] It is obtained by the biaxial stretching blow molding of polyester resin, and through the tapered shoulder 12, standing-up successive formation of the stopper section 11 is carried out, it is constituted by the upper bed of the drum section 13 of the shape of an octagon on which the cross section which formed partes basilaris ossis occipitalis 14 successively downward dropped the shape of a square, and its corner, and, as for the body 1 of the square shape bottle made from plastics, the deformation panel section 3 for carrying out deformation absorption of the pressure generated in the bottle is formed in the drum section wall surface 2 of a drum section 13, respectively.

[0011] The deformation panel section 3 consists of the arranged trough status change type section 31 and a thin concave 32 which surrounded the trough status change type section 31, and was formed.

[0012] In what is shown in drawing 1 - drawing 3, while arranging the trough status change type section 31 in two lengthwise directions, it surrounds so that the two trough status change type section 31 whole may be included, and the thin concave 32 is formed, and it has considered as the deformation panel section 3.

[0013] If it is, thus, the pressure generated in the bottle While deformation of the body 1 of a bottle comes to be absorbed by each deformation of the two trough status change type sections 31 and deformation of the deformation panel section 3 which consists of the two trough status change type section 31 whole surrounded by the thin concave 32 Also when the drum section wall surface between the two trough status change type sections 31 strengthens the rigidity of a bottle as the stave section 21 and grasps the deformation panel section of a bottle etc. by hand, the part does not produce a depression by the retention span.

[0014] Moreover, the thing made deep stair-like although it was not made deep the shape of a straight line or did not illustrate toward the core of the longitudinal direction of the body 1 of a bottle as it showed drawing 3, although the whole is good also in the depth of homogeneity, then especially the core of a longitudinal direction should be strengthened, and the thin concave 32 surrounding the trough status change type section 31 should raise the rigidity of a bottle drum section more.

[0015] while arranging the trough status change type section 31 in two lengthwise directions in what is shown in drawing 4 - drawing 5 -- the two trough status change type sections 31 -- it surrounds so that each may be included separately, and the thin concave 32 is formed, and it has considered as the deformation panel section 3.

[0016] If it is, thus, the pressure generated in the bottle While the deformation panel section 3 separately put side by side to 2 lengthwise directions absorbs deformation of the body of a bottle Since the deformation panel section 3 is formed in the mode which became independent to two each, also when the stave section 21 between the deformation panel sections 3 strengthens the rigidity of a bottle still further continuously with the drum section wall surface 2 of both sides and grasps a bottle by hand, the part does not produce a depression by the retention span.

[0017] The thing made deep stair-like although it was not made deep the shape of a straight line or did not illustrate toward the core of the longitudinal direction of the body 1 of a bottle as it showed drawing 5, although the whole is good also in the depth of homogeneity, then especially the core of a longitudinal direction should be strengthened, and the thin concave 32 which surrounded the

trough status change type section 31 also in this case should raise the rigidity of a bottle drum section more.

[0018] In addition, although the bottom of thread section 312 of the trough status change type section 31 is formed in the thin concave surface in the example of drawing 1 - drawing 5 , the dip wall 311 is made to incline from this drum section wall surface 2 to the back of the method of inside, and it is good also as the linear bottom of thread section.

[0019]

[Effect of the Invention] While this invention arranges two or more trough status change type sections constituted from this drum section wall surface by the drum section wall surface of the body of the square shape bottle made from plastics with the dip wall which inclines in the method of inside Since it is the square shape bottle made from plastics characterized by preparing the deformation panel section which surrounds the trough status change type section, and comes to form a thin concave If this bottle is filled up with hot content liquid and the pressure in a bottle declines in the process to cool, since cave-in deformation will be carried out and it will come to absorb that pressure Also when the drum section wall surface between each arranged trough status change type section strengthens the rigidity of a bottle and it not only can prevent that other parts of a bottle deform, but it grasps the deformation panel section of a bottle etc. by hand further, the part does not produce a depression by the retention span.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

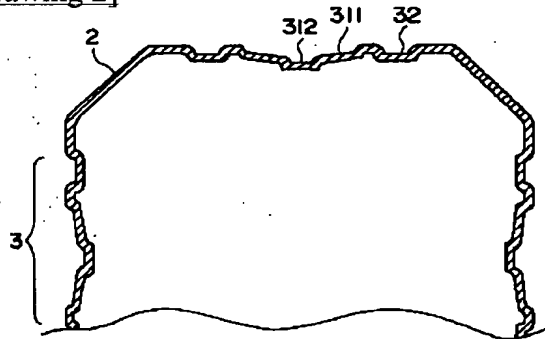
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

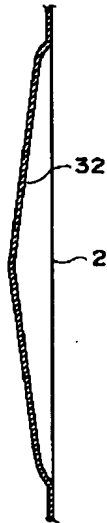
DRAWINGS

---

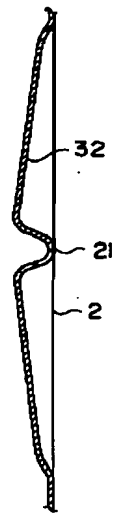
[Drawing 2]



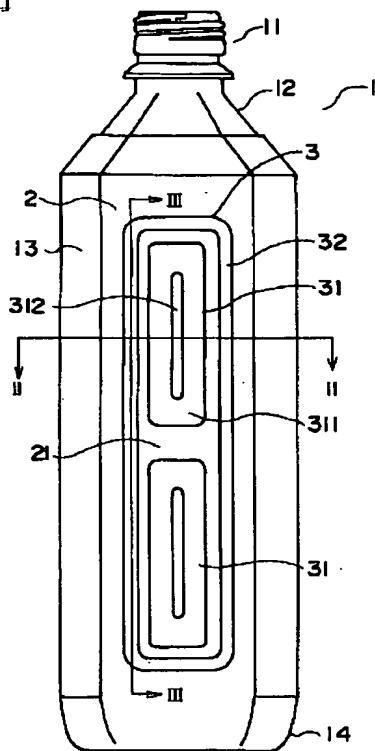
[Drawing 3]



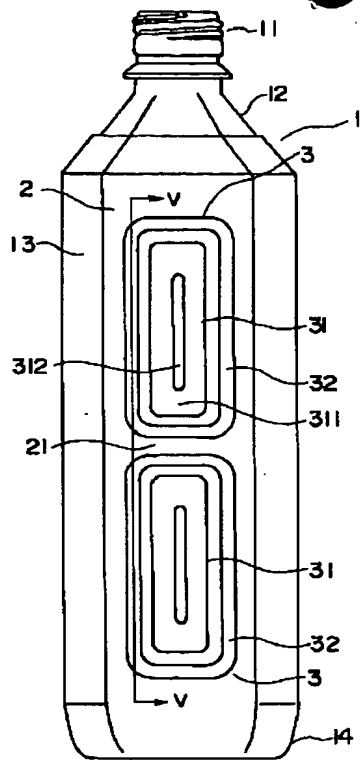
[Drawing 5]



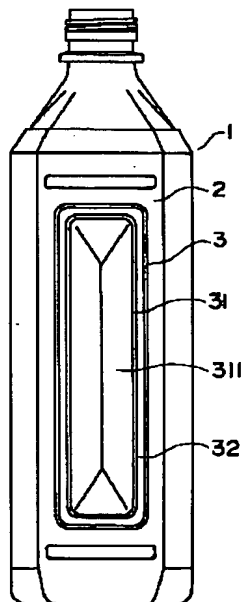
[Drawing 1]



[Drawing 4]



[Drawing 6]



[Translation done.]